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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

HAN, QI

ART UNIT PAPER NUMBER

2654

DATE MAILED: 11/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/462,127

Applicant(s)

NAKA, NOBUHIKO

Examiner

Qi Han

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 9-16 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mano et al. (JP 06-012095, and with English Translation hereinafter abbreviated as ET) hereinafter referenced as Mano, in view of Chennakeshu (USPN 5,283,811) and Salami et al. (IEEE Transaction on speech and audio processing, vol. 6, No.2, March 1998, page 116-130) hereinafter referenced as Salami.

Regarding **claim 9**, Mano discloses a speech decoding method to improve and construct speech from linear prediction coding based decoder, such as CELP, VSELP, as exhibited in Fig.1. Mano also discloses a CELP format decoder (33), ET page 5, line 7, which generates excited signals from coded speech signals inputted in unit frames and generates decoded speech from the excited signals, which is read on the claimed "A speech decoder for generating an

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excited signal from a coded speech signal inputted on a frame basis and decoding said coded speech signal on a basis of said excited signal.” Mano’s CELP decoder comprises: a synthesis filter (12) and a post-filter (13) for generating reconstructed speech that includes excited signal, and performing formant emphasis and pitch emphasis, ET page 2, line 34 to page 3, line 1, which reads on the claimed “an emphasizing unit for performing an emphasis process”; a buffer (34) in Fig.2 and Fig.3, ET page 5, line 10, for holding code error detection information, which reads on the claimed “a detecting unit”; flag group (S2, S1, S0) for counting the number of consecutive error frames ET page5, line 9-33, which reads on the claimed “a counting unit for counting and outputting a number of successive error frames.” But, Mano fails to specifically disclose “a controlling unit for stopping said emphasis process” and expressly disclose the “emphasis unit to generate excited signal.” However, the examiner contends that the concept of having an emphasis process stop unit and emphasis unit to generate an excited signal was well known, as taught by Chennakeshu and Salalmi.

In the same field of endeavor, Chennakeshu discloses decision feedback equalization for digital cellular radio. Chennakeshu’s invention includes an equalizer Fig. 3 (40), which has same function as the claimed “emphasizing unit”; a switch (40a) that can disable/enable the equalizer by turning on/off a bypass line controlled by channel error state information, column 12, line 48-53, which has the same function and purpose as the claimed “controlling unit.” And also, in the same field of endeavor, Salami discloses design and description of CS-ACELP—a toll quality 8 kb/s speech coder, comprising a filter $P(z)$ in Fig. 2 for generating excited signal with emphasized periodicity, which corresponds to the claimed “performing an emphasis process on said coded speech signal to generate said excited signal.” In addition, Salami suggests an

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error concealment procedure for generating the replacement excitation, which implicitly includes detecting frame errors, handling successive frame and/or sub-frame replacements, and controlling error concealment, page 125, section A (“concealment of frame erasures”).

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Mano by specifically providing a switch controlled by error information and a filter for generate an emphasis exited signal, as taught by Chennakeshu and Salami, for the purpose of preventing from degrading speech quality.

Regarding **claim 15**, it discloses a method, which corresponds to the apparatus of claim 9. The method is obvious in that it simply provides functionality for the structure found in claim 9.

3. Claims 10-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mano in view of Ota et al. (JP 02-256308 and with English Translation hereinafter abbreviated as ET2), hereinafter referenced as Ota, and in view of Salami.

Regarding **claim 10**, Mano discloses a speech decoding method to improve and construct speech from linear prediction coding based decoder, such as CELP, VSELP, as exhibited in Fig.1. Mano also discloses a CELP format decoder (33), ET page 5, line 7, which generates excited signals from coded speech signals inputted in unit frames and generates decoded speech from the excited signals, which is read on the claimed “A speech decoder for generating an excited signal from a coded speech signal inputted on a frame basis and decoding said coded speech signal on a basis of said excited signal.” Mano’s CELP decoder comprises: a synthesis filter (12) and a post-filter (13) for generating reconstructed speech that includes excited signal,

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and performing formant emphasis and pitch emphasis, ET page 2, line 34 to page 3, line 1, which reads on the claimed “an emphasizing unit for performing an emphasis process”; a buffer (34) in Fig.2 and Fig.3, ET page 5, line 10, for holding code error detection information, which reads on the claimed “a detecting unit”; flag group (S2, S1, S0) for counting the number of consecutive error frames, ET page 5, line 9-33, which reads on the claimed “a counting unit for counting and outputting a number of successive error frames.” But, Mano fails to specifically disclose “a controlling unit for controlling at least one degree of emphasis performed in said emphasizing unit on a basis of said number of successive error frames” and expressly disclose the “emphasis unit to generate excited signal”. However, the examiner contends that the concept of having an emphasis unit to generate excited signal and a control mechanism to control the amount of the emphasis unit based on error condition was well known, as taught by Ota and Salalmi.

In the same field of endeavor, Ota discloses an adaptive post-filter control method with an amount controllable adaptive post-filter (4), as exhibited in Fig 2., ET2 page 1, lines 21-25. Moreover, the amount of output of the adaptive post-filter can be controlled by both the error detecting decoder (32) and the channel state monitoring portion (33), according to the degree of the errors, which reads on the claimed “a controlling unit for controlling at least one degree of emphasis performed in said emphasizing unit on a basis of said number of successive error frames.” Beside, Salami discloses a CS-ACELP decoder, comprising a filter $P(z)$ in Fig. 2 for generating excited signal with emphasized periodicity, page 122, line 28, which corresponds to the claimed “performing an emphasis process on said coded speech signal to generate said excited signal.” In addition, Salami suggests the amount of the filter output is controllable based on the changes of pitch lag value and the adaptive-codebook gain, page 122, right column, lines

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29-30, which are further controlled by the concealment procedure page 125, right column, lines 31-33.

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Mano by specifically providing an amount controllable adaptive filter and a control means, as taught by Ota, for purpose of reducing the influence of channel errors.

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Mano by specifically providing an amount controllable adaptive filter and a control means for generating excited signal and controlling amount of emphasis of the filter based on frame error condition, as taught by Ota and Salami, for the purpose of preventing from degrading speech quality.

Regarding **claim 11**, Mano, Ota and Salami disclose everything claimed, as applied above (see claim 10). Mano and Salami fail to specifically disclose a plurality of emphasizing units with individual amount of emphasis and a selection unit to select the emphasizing units. However, the examiner contends that the concept of having a plurality of amount controllable emphasizing units and a unit selection means, as taught by Ota.

Ota further discloses an emphasis mechanism including a error detector (32) in Fig 2, coefficient generators (311 and 341) and state monitor (33) coefficient generators (311 and 341) for controlling emplacing amount according to error detection and other condition, coefficient selection switch (SW) for selecting coefficient generators, a post-filter (4) with two coefficient devices (42) and (43) each of which can be controlled by separated input for its weighting coefficient, ET page 6, lines 21-34 and page 7, lines 9-11, which is read on the claimed "said

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emphasizing unit comprises a plurality of sub-emphasizing units each of which performs an emphasis process on each of the at least one degrees of emphasis; and said controlling unit comprises a selection unit for selecting at least one of said sub-emphasizing units, wherein said controlling unit selects one or more of said sub-emphasizing units on the basis of said number of successive error frames.”

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Mano and Salami by specifically providing a plurality of amount controllable emphasizing units by using adaptive filter and a switch for select the units, as taught by Ota, for purpose of increasing flexibility and adaptability and further reducing the influence of frame errors.

Regarding **claim 12**, Mano, Ota and Salami disclose everything claimed, as applied above (see claim 11). Mano and Salami fail to specifically disclose an alternative bypass selection for an emphasizing unit, such as adaptive filter. However, examiner contends that the concept of having a bypass selection for a filter was well known, as taught by Ota.

Ota's invention includes a bypass means onto a plurality of amounts of adaptive filter through a switch (SW) in Fig. 2 and a coefficient generator (341), ET page 7, lines 8-13, which provides a bypass alternative selection without performing the emphasis process when the coefficient generator (341) is pre-set value of zero, as claimed.

Therefore, it would have been obvious to one of ordinary skill in the art at time the invention was made to modify Mano and Salami by specifically providing an additional bypass selection for a plurality of amounts of adaptive filter and a selection switch, as taught by Ota, for

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purpose of offering one more one more alternative choice of emphasis and flexibly reducing the influence of frame errors.

Regarding **claim 13**, Mano, Ota and Salami disclose everything claimed, as applied above (see claim 11). As stated above, Salami discloses the amount of the filter output is controlled based on the changes of pitch lag value and adaptive-codebook gain. Salami further disclose that during the concealment procedure, the lag value is increased (equivalent to pitch frequency decreased) by one for each next sub-frame and the adaptive-codebook gain is attenuated with respect to previous sub-frame, page 125, right column, lines 31-33, which reads on the claimed "said controlling unit lowers the degree of emphasis for as the number of said successive error frames increases."

Regarding **claim 14**, Mano, Ota and Salami disclose everything claimed, as applied above (see claim 11). As stated above, Salami discloses a filter $P(z)$ in Fig. 2 for generating excited signal from coded speech signal, page 122, line 28. Salami further discloses that during the concealment, the adaptive-codebook gain is attenuated with respect to previous sub-frame, page 125, right column, lines 31-33, which inherently controls and changes the gain of the filter because the adaptive adaptive-codebook gain is one of the function variables (parameters) of the filter, which reads on the claimed "said emphasizing unit comprises a filter for filtering said coded speech signal; and said controlling unit controls a gain of said filter on the basis of said number of successive error frames."

Regarding **claim 16**, it discloses a method, which corresponds to the apparatus of claim 10. The method is obvious in that it simply provides functionality for the structure found in claim 10.

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Conclusion

4. Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703)-872-9314

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (703) 305-5631. The examiner can normally be reached on Monday through Thursday from 8:00 a.m. to 5:30 p.m. and Friday from 8:00 a.m. to 12:00 a.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold, can be reached on (703) 305-4379.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

QH/qh
November 7, 2002

Marsha D Banks-Harold
MARSHA D. BANKS-HAROLD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600